

AC Line Rated Disc Capacitors
Class X1, 400 VAC/Class Y1, 500 VAC



LO' = 0.158" (4.0 mm) typ.

INSULATION RESISTANCE

min. 1000 ΩF

TOLERANCE ON CAPACITANCE

± 10 %; ± 20 %

DISSIPATION FACTOR

2.0 % max. at 1 kHz; 1 V

CERAMIC DIELECTRIC

C0G, U2J, P3K, R3L (class 1)
X7R, Y5U (class 2)

CATEGORY TEMPERATURE RANGE

- 25 °C to + 125 °C

OPERATING TEMPERATURE RANGE

- 30 °C to + 125 °C

CLIMATIC CATEGORY ACC. TO EN60068-1

25/125/21

FEATURES

- Worldwide Safety Agency Recognition
Underwriters Laboratories - UL 1414 and UL 1283
Canadian Standards Association - CSA 22.2
European EN132400 to IEC 60384-14 Second Edition
- Complete range of capacitance values
- Radial leads
- Compliant to RoHS directive 2002/95/EC



APPLICATIONS

- Required in AC power supply and filter applications
- Specific industry requirements

DESIGN

The capacitors consist of a ceramic disc of which both sides are silver-plated. Connection leads are made of tinned copper having a diameter of 0.032" (0.81 mm). The capacitors may be supplied with radial kinked or straight leads having a lead spacing of 0.375" (9.5 mm). The standard tolerances are ± 10 % or ± 20 %. Coating is made of flame retardant epoxy resin in accordance with "UL 94 V-0".

CAPACITANCE RANGE

10 pF to 0.01 μF

RATED VOLTAGE U_R

| | |
|----------------|----------------------|
| IEC 60384-14.2 | (Y1): 500 VAC, 50 Hz |
| IEC 60384-14.2 | (X1): 400 VAC, 50 Hz |
| UL 1414: | 250 VAC, 60 Hz |
| UL 1283: | 600 VAC, 60 Hz |
| CSA 22.2: | 250 VAC, 60 Hz |

DIELECTRIC STRENGTH BETWEEN LEADS

Component test:
4000 VAC, 50 Hz, 2 s
As repeated test admissible only once with:
3600 VAC, 50 Hz, 2 s
Random sampling test (destructive test):
4000 VAC, 50 Hz, 60 s

DIELECTRIC STRENGTH OF BODY INSULATION

4000 VAC, 50 Hz, 60 s (destructive test)

440L Series

Vishay Cera-Mite

AC Line Rated Disc Capacitors
Class X1, 400 VAC/Class Y1, 500 VAC



| ORDERING INFORMATION, CERAMIC X1/Y1 CAPACITORS 440L | | | | | | | |
|---|--------------|---------------|----------------|-----------|--------------|------------------|------------------|
| C (pF) | TOL. (%) | D DIAMETER | T THICKNESS | WIRE SIZE | | LS LEAD SPACE | ORDERING CODE |
| | | | | AWG | INCH (mm) | | |
| C0G | | | | | | | |
| 10 | ± 10 % | 0.330 (8.4) | 0.195 (5.0) | 20 | 0.032 (0.81) | 0.375 (9.5) | 440LQ10-R |
| U2J | | | | | | | |
| 15 | ± 10 % | 0.330 (8.4) | 0.210 (5.3) | 20 | 0.032 (0.81) | 0.375 (9.5) | 440LQ15-R |
| P3K | | | | | | | |
| 22 | ± 10 % | 0.330 (8.4) | 0.190 (4.8) | 20 | 0.032 (0.81) | 0.375 (9.5) | 440LQ22-R |
| R3L | | | | | | | |
| 33 | ± 10 % | 0.330 (8.4) | 0.200 (5.1) | 20 | 0.032 (0.81) | 0.375 (9.5) | 440LQ33-R |
| 47 | ± 10 % | 0.330 (8.4) | 0.180 (4.6) | 20 | 0.032 (0.81) | 0.375 (9.5) | 440LQ47-R |
| X7R | | | | | | | |
| 68 | ± 10 % | 0.330 (8.4) | 0.220 (5.6) | 20 | 0.032 (0.81) | 0.375 (9.5) | 440LQ68-R |
| 100 | | | 0.220 (5.6) | | | | 440LT10-R |
| 150 | | | 0.235 (6.0) | | | | 440LT15-R |
| 220 | | | 0.235 (6.0) | | | | 440LT22-R |
| 330 | | | 0.225 (5.7) | | | | 440LT33-R |
| Y5U | | | | | | | |
| 470 | ± 20 % | 0.330 (8.4) | 0.230 (5.8) | 20 | 0.032 (0.81) | 0.375 (9.5) | 440LT47-R |
| 560 | | 0.330 (8.4) | 0.230 (5.8) | | | | 440LT56-R |
| 680 | | 0.330 (8.4) | 0.235 (6.0) | | | | 440LT68-R |
| 1000 | | 0.365 (9.3) | 0.220 (5.6) | | | | 440LD10-R |
| 1500 | | 0.365 (9.3) | 0.220 (5.6) | | | | 440LD15-R |
| 2000 | | 0.400 (10.2) | 0.220 (5.6) | | | | 440LD20-R |
| 2200 | | 0.430 (10.9) | 0.225 (5.7) | | | | 440LD22-R |
| 2700 | | 0.460 (11.7) | 0.225 (5.7) | | | | 440LD27-R |
| 2800 | | 0.460 (11.7) | 0.220 (5.6) | | | | 440LD28-R |
| 3000 | | 0.490 (12.4) | 0.225 (5.7) | | | | 440LD30-R |
| 3200 | | 0.490 (12.4) | 0.220 (5.6) | | | | 440LD32-R |
| 3300 | | 0.490 (10.9) | 0.215 (5.5) | | | | 440LD33-R |
| 3900 | | 0.530 (13.5) | 0.220 (5.6) | | | | 440LD39-R |
| 4000 | | 0.530 (13.5) | 0.220 (5.6) | | | | 440LD40-R |
| 4700 | | 0.620 (15.7) | 0.230 (5.8) | | | | 440LD47-R |
| 5000 | | 0.620 (15.7) | 0.225 (5.7) | | | | 440LD50-R |
| 5500 | | 0.680 (17.3) | 0.230 (5.8) | | | | 440LD55-R |
| 5600 | | 0.680 (17.3) | 0.230 (5.8) | | | | 440LD56-R |
| 6800 | | 0.720 (18.3) | 0.235 (6.0) | | | | 440LD68-R |
| 8000 | | 0.720 (18.3) | 0.220 (5.6) | | | | 440LD80-R |
| 9000 | 0.790 (20.1) | 0.225 (5.7) | 440LD90-R | | | | |
| 0.01 µF | | 0.850 (21.6) | 0.230 (5.8) | | | | 440LS10-R |

Notes

- Alternate lead spacings are available bulk or tape and reel on request.
- European required minimum lead clearance (prevents use of inside crimp) 0.315" (8 mm)

TAPE AND REEL OPTIONS

- To specify tape and reel, add two letter suffix to the ordering code (for details of the packaging code see general section of the catalog)



LEAKAGE CURRENT VS. VOLTAGE (TYPICAL) INSERTION LOSS VS. FREQUENCY (TYPICAL)



440L Series

Vishay Cera-Mite

AC Line Rated Disc Capacitors
Class X1, 400 VAC/Class Y1, 500 VAC



| APPROVALS | | | | | | |
|---|---|--------------|-------------|-------------------|---------------------|----------------|
| IEC 60384 - 14/2nd Issue (1993) incl. Am. 1 (1995) - Safety Tests | | | | | | |
| EN 132 400 (1994) - Safety Tests | | | | | | |
| That approval together with CB Test Certificate substitutes the national approval of the following nations: | | | | | | |
| Belgium | France | Italy | Austria | China | Japan | Spain |
| Denmark | Greece | Luxembourg | Portugal | Singapore | Poland | United Kingdom |
| Germany | Ireland | Netherlands | Sweden | Slovenia | Hungaria | Czech Republic |
| Finland | Iceland | Norway | Switzerland | Korea | Israel | |
| Y1 Capacitor: CB-Test Certificate: DE 1-19452 | | | | 10 pF... 0.01 µF | 500 V _{AC} | |
| X1 Capacitor: CB-Test Certificate: DE 1-19452 | | | | 10 pF... 0.01 µF | 400 V _{AC} | |
| UNDERWRITERS LABORATORIES | | | | | | |
| UL 1414 | Across-the-line, Antenna-coupling and Line-by-pass component. | | | 10 pF... 0.01 µF | 250 V _{AC} | |
| | Agency File/License | E99264 V2S2 | | | | |
| UL 1283 | EMI Filters | | | 10 pF... 0.01 µF | 600 V _{AC} | |
| | Agency File/License | E128046 V1S2 | | | | |
| CANADIAN STANDARDS ASSOCIATION | | | | | | |
| CSA C22.2 | Across-the-line, Isolation capacitor | | | 10 pF... 0.01 µF | 250 V _{AC} | |
| No. 1-98 | Agency File/License | LR 62016-12 | | | | |
| No. 1-94 | Across-the-line, Line to ground, Isolation capacitor | | | 100 pF... 0.01 µF | 250 V _{AC} | |
| | Agency File/License | LR 62016-1 | | | | |

Note 1

UL 1414 Across-The-Line, Antenna Coupling, and Line-By-Pass Capacitors:

- Across-The-Line - A capacitor connected either across a supply circuit or between one side of a supply circuit and a conductive part that may be connected to earth ground.
- Antenna-Coupling - A capacitor connected from an antenna terminal to circuits within an appliance.
- Line-By-Pass - A capacitor connected between one side of a supply circuit and an accessible conductive part.

Note 2

IEC 60384-14 Subclass Y Capacitors:

- A capacitor of a type suitable for use in situations where failure of the capacitor could lead to danger of electric shock.
- Class Y capacitors are divided into sub- classes based on type of insulation bridged and voltage ranges.
- For definitions of basic, supplementary, double and reinforced insulation, see IEC Publication 536.
- Subclass Y capacitors may be used in applications which require a Subclass X rating.

Note 3

IEC 60384-14 Subclass X Capacitors:

- A capacitor of a type suitable for use in situations where failure of the capacitor would not lead to danger of electric shock.
- Class X capacitors are divided into subclasses according to the peak impulse test voltage superimposed on the main voltage.

| MARKING | |
|---------|--|
| | <p> Type: 571C085B251AY103MLA612-R CM PN: 440LS10-R E3 Qty. : 100 IEC60384-14/2: Y1 (500~), X1 (400~) R.C.: 7032 S.L.: 0010 BATCH NO.: 200622CZ PN: 440LS10-R LOT1: 11647764 LOT2: DC1: 0622 DC2: Op.No.: 771 SN: 2901BB14024 RoHS </p> |



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.